भारतीय मानक
Indian Standard

IS 3537 : 2017
(***Superseding IS 129 : 1950, IS 870 : 1960 and IS 871 : 1956***)
(Reaffirmed 2022)

परिष्करण एवं आंतरिक उपयोग हेतु, सामान्य उद्देश्यों के लिए भारतीय मानक रंग के अनुरूप तैयार मिश्रित रंग रोगन — विशिष्टि

(पहला पुनरीक्षण)

Ready Mixed Paint, Finishing, Interior, for General Purposes, to Indian Standard Colours — Specification

(First Revision)

ICS 87.040

भारतीय मानक ब्यूरो
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Paints, Varnishes and Related Products Sectional Committee, CHD 20

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints, Varnishes and Related Products Sectional Committee had been approved by the Chemical Division Council.

This standard was originally published as IS 3537E- 1966 in accordance with the simplified emergency procedures to meet the urgent needs of the country. It was issued as an alternative to the following standards:

IS 129 : 1950 Paint tinted to various colours, interior, brushing, finishing, oil-gloss

IS 133 : 1965 Specification for enamel, interior (*a*) undercoating, (*b*) finishing, colour as required (*revised*)

IS 641 : 1964 Specification for ready mixed paint, brushing, finishing, interior, semi-gloss, for general purposes, white (*revised*)

IS 870 : 1962 Specification for ready mixed paint, brushing, finishing, egg shell gloss, for interior use, to Indian Standard Colours No.101, 216, 217, 219, 275, 281 and 358 IS 871 : 1956 Green paint, interior

This standard was issued aiming at easing the stringent foreign exchange position by replacing imported raw materials with alternative indigenous products and economizing the use of indigenous raw materials, such as drying oils, which might be released for export. In this standard, use of lead and zinc pigments had been eliminated. An amended list of colours now possible under this standard has been given. Restriction in the range of choice of colours to 26 shades, for internal consumption only, has been attempted in order to promote conservation of raw materials, optimization of production and necessary import substitution through rationalization of the requirements of the consumer. As material to this standard may be produced in different types of finish (gloss, semi-gloss, egg shell and matt) while indenting, type of finish required shall be specifically stated.

Revision of this standard has been taken up along with other related standards with a view to consider incorporation of the limit of lead restriction in this standard. The Technical Committee responsible for formulation of this standard observed that in practice most of the paints are used for household/decorative as well as in industrial/ commercial applications. Taking cognizance of the fact that lead exposure of human being, particularly children, has adverse effect on human health and also adverse impact on environment and safety, the Technical Committee felt the need to introduce different levels of lead restriction in all paint standards likely to be used for household and decorative applications.

The Technical Committee observed that technologically it is feasible to manufacture this product with low limit of lead. The Committee also observed that the scope of this product allows this paint to be used for general applications and decided to prescribe maximum permissible limit of lead as 300 ppm to avoid hazardous impact of lead exposure on environment and human health.

Further, majority of consumers are not aware of the consequences of lead toxicity and its long- term implications to human health. Therefore, in this revision, alongwith lead restriction, a suitable cautionary notice has been included in the marking clause. Reference has been given to various parts/sections of IS 101 for the requirements given in the standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values *(revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

READY MIXED PAINT, FINISHING, INTERIOR, FOR GENERAL PURPOSES, TO INDIAN STANDARD COLOURS — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for ready mixed paint, finishing, interior, for general purposes, with distinctive colours as specified below as prescribed in IS 5:

BLUE	GREEN	YELLOW, CREAM AND BUFF
No. 101	No. 216	No. 352
Sky Blue	Eau-de-Nil	Pale Cream
	No. 217	No. 353
	Sea Green	Deep Cream
GREY	No. 219	No. 358
	Sage Green	Light Buff
No. 628	No. 275	No. 359
Silver Grey	Opaline Green	Middle Buff
No. 631	No. 281	No. 360
Light Grey	Apple Green	Deep Buff
No. 632 Dark		No. 361
Admiralty Grey		Light Stone
No. 634 Slate	BROWN	No. 363
	AND PINK	Dark Stone
No. 693	No. 410	No. 364
Aircraft Grey	Light Brown	Portland Stone
No. 697 Light	No. 442 Light	No. 388 Biege
Admiralty Grey	Salmon Pink	
	No. 444	
	Terra Cotta	

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1303 shall apply.

4 REQUIREMENTS

4.1 Composition

The material shall be of such a composition as to satisfy the requirements of this standard.

4.1.1 Zinc oxide and white lead shall not be used.

4.2 Fastness to Light Test

4.2.1 *Panel*

Mild steel plate panel used fort this test, unless otherwise mentioned, shall be prepared as prescribed in **2** of IS 101(Part 1/Sec 3).

4.2.2 *Test/conditions*

The material shall be tested according to the method prescribed in IS 101 (Part 4/Sec 3) in Xenon Arc apparatus with the test conditions as prescribed below:

a) black panel temperature 63° ± 3°C
b) continuous exposure in light
c) time of exposure to light for 250 h

4.3 Lead Restriction

The material shall not contain lead or compounds of lead or mixtures of both, calculated as metallic lead more than 300 ppm, when tested for restriction from lead in accordance with IS 101(Part 8/Sec 5).

4.4 The material shall also comply with the requirements given in Table 1.

4.5 Optional Requirements

In addition, if agreed to between the purchaser and the supplier, the spreading capacity and spreading time shall be determined in accordance with methods prescribed in Annex B and the results recorded on the sample offered for registration against this standard. In case of supplies offered against any approved sample to this standard, spreading capacity shall be minimum 90 percent of the approved sample and spreading time shall not deviate by more than 10 percent from that of the approved sample.

Table 1 Requirements for Ready Mixed Paint, Finishing, Interior, for General Purposes, to Indian Standard Colours

(*Clause* 4.4)

Sl No.	Characteristic	Requirement	Methods of Test, Ref to	
			Annex of this Standard	IS 101
(1)	(2)	(3)	(4)	(5)
i)	Drying time, h, Max			
	a) Surface dry	4	—	(Part 3/Sec 1)
	b) Hard dry	12		
	c) Tack free	24		
ii)	Consistency	Smooth and uniform	C	—
iii)	Finish	Smooth and glossy, semi-glossy, egg or shell matt, as required	—	(Part 3/Sec 4)
iv)	Colour	Close match to the specified colour as given in IS 5	—	(Part 4/Sec 2)
v)	Fastness to light	Passes the test if there shall be no appreciable colour change observed when compared to the unexposed panels	—	(Part 4/Sec 3)
vi)	Weight in kg/10 litre	Shall be within ± 3 percent of the approved sample, if any	—	(Part 1/Sec 7)
vii)	Water content", Max	0.5	—	(Part 2/Sec 1)
viii)	Flexibility and adhesion	No such scratch as to show the bare metal	—	3 of (Part 5/Sec 2)
	a) Scratch hardness (1 000 g)			
	b) Bend test (with 6.25 mm dia mandrel and in type 1 apparatus)	No visible damage or detachment or cracking	—	2 of (Part 5/Sec 2)
ix)	Stripping test	Shall be free from jagged edge	D	—
x)	2) Resistance to water	To pass the test	E	—
xi)	Flash point	Not below 20°C	—	(Part 1/Sec 6)
xii)	Keeping properties	Not less than one year from the date of manufacturing	—	(Part 6/Sec 2)

1) Test the presence of water qualitatively by heating about 20 ml of the stirred and thoroughly mixed material in a metal dish. Presence of water, if any, is indicated by a cracking noise.

5 PACKING AND MARKING

5.1 Packing

Unless otherwise agreed to between the purchaser and the supplier, the paint shall be packed in metal containers conforming to IS 1407 and IS 2552. The packing is subject to the provisions of the law in force in the country at that time.

5.1.1 Each container shall be marked with the following:

a) Name of the material;

b) Indication of the source of manufacturer;

c) Volume of the material;

d) Batch number or Lot number in code or otherwise;

e) Colour of the material;

f) Lead content (Max); and

g) Cautionary note as below:

1) Keep out of reach of children.

2) Dried film of this paint may be harmful if eaten or chewed.

3) This product may be harmful if swallowed or inhaled.

5.1.2 *BIS Certification Marking*

The container may also be marked with the Standard Mark.

5.1.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act,* 1986 and the Rules and Regulations made thereunder. The details of conditions under which the Iicence for the use of the Standard Mark may be granted to manufacturers or producers maybe obtained from the Bureau of Indian Standards**.**

5.2 Other details of packing and marking shall be in accordance with the instructions given by the purchaser.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed under **3** of IS 101(Part 1/Sec 1).

6.2 Preparation of Test Samples

6.2.1 *For Drying Time*

Prepare mild steel panel of sizes 150 mm × 100 mm × 1.25 mm as prescribed in **2** of IS 101 (Part 1/Sec 3). Apply the paint on each side of the panel uniformly by

brushing to give a dry film mass commensurate with the mass per 10 litre as specified in Table 1 of IS 101(Part 3/Sec 4). Prepared test panel then subjected to the test as specified in IS 101(Part 3/Sec 1) as soon as possible.

6.2.2 *For Flexibility and Adhesion Test and Stripping Test*

For all these tests prepare separate burnished tin plate panels, rectangular, of sizes 100 mm × 50 mm × 0.3 mm as prescribed in **3** of IS 101 (Part 1/Sec 3). Apply one coat of material uniformly by brushing on the panels as to give a dry film mass commensurate with the mass per 10 litre as specified in Table 1 of IS 101(Part 3/Sec 4). The coated test panels shall be dried for 96 h for all the tests and then shall be conditioned at a temperature of 27° ± 2°C and relative humidity of 65 ± 5 percent for a minimum time of 16 h. Prepared test panels then subjected to the test as prescribed in **2** and **3** of IS 101 (Part 5/Sec 2) for bend test and scratch hardness test respectively. Prepared test panel then subjected to the stripping test as prescribed in Annex D.

6.3 Criteria for Conformity

A lot shall be declared as conforming to the requirements of this standard if the test results of the composite sample satisfy the requirements prescribed under **4.**

7 TEST METHODS

7.1 Tests shall be conducted as prescribed in **4.1** and **4.4** and in col 4 and 5 of Table 1.

7.2 Quality of Reagents

Unless otherwise specified, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
5 : 2007	Colours for ready mixed paints and enamels (*sixth revision*)
101	Methods of sampling and test of paints, varnishes and related products:
Part 1	Test on liquid paints (general and physical),
Sec 1 : 1986	Sampling (*third revision*)
Sec 3 : 1986	Preparation of panels (*third revision*)
Sec 6 : 1987	Flash point (*third revision*)
Sec 7 : 1987	Mass per 10 litres (*third revision*)
Part 2/ Sec 1 : 1988	Test on liquid paints (chemical examination), Section 1 Water content\(*third revision*)
Part 3	Tests on paint film formation,
Sec 1 : 1986	Drying time (*third revision*)
Sec 2 : 1989	Film thickness (*third revision*)
Sec 4 : 1987	Finish (*third revision)*
Part 4	Optical test,
Sec 2 : 1989	Colour (*third revision*)
Sec 3 : 1998	Light fastness test (*third revision*)
Part 6/ Sec 2 : 1989	Durability tests on paint film, Section 2 Keeping properties (*third revision*)
Part 7/ Sec 1 : 1989	Environmental tests on paint films, Section 1 Resistance to water (*third revision*)
Part 8/ Sec 5 : 1993	Tests for pigments and other solids, Section 5 (Lead restriction test (*third revision*)
1070 : 1992	Reagent grade water (*third revision*)
1303 : 1983	Glossary of terms relating to paints (*second revision*)
1407 : 1977	Specification for round paint tins (*second revision)*
2552 : 1979	Specification for steel drums (galvanized and ungalvanized) (*second revision)*

ANNEX B

(*Clause* 4.5)

SPREADING CAPACITY AND SPREADING TIME

B-0 OUTLINE OF THE METHOD

B-0.1 For spreading capacity, the area to be covered by 10 litres of the paint is measured.

B-0.2 For the spreading time, the time taken to spread a definite quantity of the paint over a fixed area is measured.

B-1 APPARATUS

B-1.1 Weighing balance of suitable capacity

B-1.2 A suitable brush

B-1.3 A stop watch

B-1.4 A non-absorbent smooth surface, one square metre in area preferably of mild steel.

B-2 PROCEDURE

Weigh an appropriate quantity of the material together with a suitable brush. The material shall then be applied by brushing to a flat, smooth and non-absorbent surface, one square metre in area, in a uniform normal coat commensurate with satisfactory coverage and appearance. The balance of the material with the brush shall be weighed. The time taken also shall be noted.

B-3 CALCULATION

The Spreading capacity shall be calculated as the number of square metre that can be covered by 10 litres of paint. The spreading time shall be the time taken to cover 100 square metres of the surface.

ANNEX C

[*Table* 1, *Sl No.*(ii)]

CONSISTENCY

C-1 APPARATUS

C-1.1 Palette Knife or Metal Rod

C-1.2 Panels

C-1.2.1 Unless specified otherwise, glass panel of size 150 mm × 100 mm shall be prepared as prescribed in **5** of IS 101 (Part 1/Sec 3).

C-2 PROCEDURE

C-2.1 Insert a clean metal rod or palette knife into the original container and examine the nature of settling.

C-2.2 Observations

The material shall not cake hard inside the container and shall be in such a condition that stirring easily produces a smooth uniform paint suitable for brushing on steel panels.

ANNEX D

[*Table* 1, *Sl No.* (ix) and *Clause* 6.2]

STRIPPING TEST

D-0 OUTLINE OF THE METHOD

The minimum load required to produce a scratch showing the bare metal surface of the panel painted with the material is determined.

D-1 APPARATUS

The apparatus used for determining scratch hardness as prescribed in **3.2.2** of IS 101(Part 5/Sec 2) shall be used.

D-2 PROCEDURE

D-2.1 Preparation of Test anels

Mild steel panels described under **6.2.2** shall be prepared.

D-2.2 Test the dried film in the apparatus under such a load that a scratch is produced showing the bare metal surface.

D-3 OBSERVATIONS

D-3.1 The paint shall be deemed to have passed the test if the scratch so produced shall be free from jagged edges.

ANNEX E

[*Table* 1, *Sl.No.* (x)]

TEST FOR RESISTANCE TO WATER

E-0 GENERAL

E-0.1 Outline of the Method

This method gives an indication of the results likely to be obtained when painted articles are stored under conditions where prolonged condensation may be produced but not an extremely corrosive atmosphere.

E-1 MATERIALS

E-1.1 Test Panels

Glass panel of size 150 mm × 50 mm. Prepare the panel as prescribed in **5** of IS 101(Part 1/Sec 3).

E-2 PROCEDURE

E-2.1 Apply a coat of material uniformly on glass panels as prescribed in **5** of IS 101(Part 1/Sec 3) to give a dry film mass commensurate with the mass per 10 litre as specified in Table 1 of IS 101(Part 3/ Sec 4). Allow the panel to air dry in a horizontal position for 48 h. Then follow the procedure as prescribed in **4.1.1, 4.2** and **5** of IS 101(Part 7/Sec 1). Immerse the panel in the tank at room temperature for 24 h. Remove the panels from water and examine it after 4 h.

E-3 OBSERVATIONS

E-3.1 The paint shall be deemed to have passed the test, if the painted panel shall be free from blisters, peeling or flaking and undue change in colour. Gloss retention shall not be less than 60 percent of the gloss of unimmersed portion.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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